

Air Launch from a Towed Glider

Canceled Technology Project (2012 - 2014)



Project Introduction

This research effort is exploring the concept of launching a rocket from a glider that is towed by an aircraft. The idea is to build a relatively inexpensive remotely piloted glider that could be towed to altitude by a large transport aircraft. The glider would carry a booster rocket capable of launching payloads into orbit. After the rocket launch, the glider would return independently of the tow aircraft to its base to be used again. This approach could significantly reduce the cost and improve the efficiency of sending satellites into orbit.

Work to date: Three separate technical feasibility studies completed by independent contractors indicate the technique could achieve significant performance gains over vertical ground launches of similarsized rockets. The Dryden team has designed and is building a subscale research model to test operational aspects and characterize flight performance and handling qualities. Flight testing and crew training have begun on a single fuselage glider that will be towed to altitude by early 2014. Looking ahead: Future plans involve continuing work to assemble a one-third scale glider model with a 24-foot wingspan to obtain operational experience while under towed flight, as well as performance and handling qualities data. Plans are underway to flight demonstrate a rocket launch from the sub-scale model in 2014. Whittinghill Aerospace is fabricating a rocket for this air launch flight demonstration, under a Phase III SBIR..

Benefits

- More economical: Use of a simple remotely piloted glider, without the complex propulsion and crew life support systems required for a crewed, powered aircraft, provides an inexpensive air launch platform
- Increased payload: A towed glider can carry over twice the payload of a dedicated powered aircraft
- Safer: Remotely piloted gliders that are towed 1000+ feet behind the tow plane offer a substantial safety perimeter from the high energy systems inherent in rocket boosters (as compared to other air-launch methodologies)

Anticipated Benefits

N/A



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Armstrong Flight Research Center (AFRC)

Responsible Program:

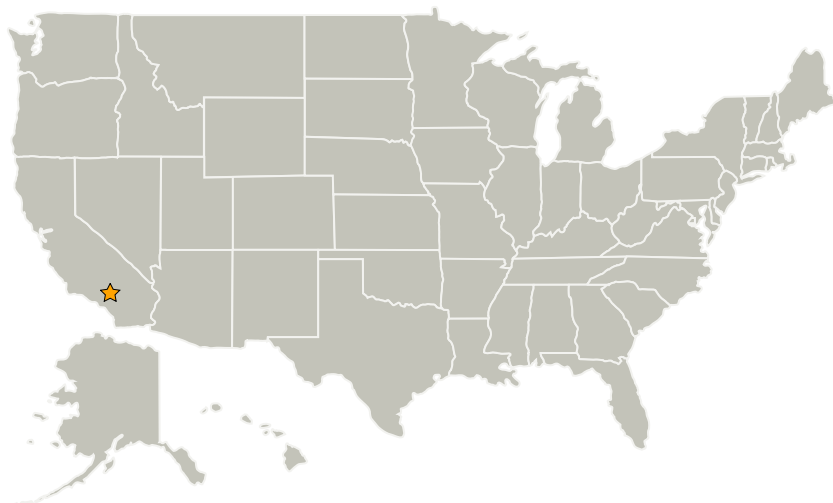
Center Innovation Fund: AFRC CIF

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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Armstrong Flight Research Center (AFRC)	Lead Organization	NASA Center	Edwards, California

Project Transitions

**October 2012:** Project Start**October 2014:** Project canceled because merged or otherwise absorbed into another project**Rationale:** Project canceled because merged or otherwise absorbed into another project

Project Management

Program Director:

Michael R Lapointe

Program Manager:

David F Voracek

Project Manager:

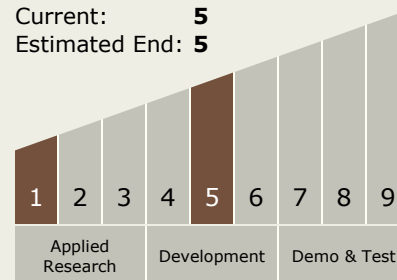
David F Voracek

Principal Investigator:

Gerald D Budd

Technology Maturity (TRL)

Start: **1**
 Current: **5**
 Estimated End: **5**



Technology Areas

Primary:

- TX15 Flight Vehicle Systems
 - TX15.2 Flight Mechanics
 - TX15.2.3 Flight Mechanics Testing and Flight Operations